

EPA Proposes Cleanup Plan for Refinery Property

Cam-Or Site
Westville, Indiana

November 2007

Share your opinions

EPA invites comments on its proposed cleanup plan for the Cam-Or site. Public input helps EPA determine the best course of action. EPA also encourages people to attend the upcoming public meeting on Wednesday, Dec. 12, at the Westville Public Library, 153 Main St., starting at 6:30 p.m.

There are several ways to offer comments on the proposed plan:

- Orally or in writing at the public meeting
- Fill out and mail the enclosed comment form
- Electronically via the Internet at: epa.gov/region5/publiccomment/
- Fax to Yolanda Bouchee at 312-353-1155 or e-mail Yolanda at the address below

Comments can be submitted to EPA from Dec. 3, 2007, to Jan. 11, 2008.

Contact EPA

These EPA representatives are available to answer questions and provide more information. Also, if you need special accommodations at the Dec. 12 public meeting contact Yolanda.

Yolanda Bouchee

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Contaminated soil at the former Cam-Or waste oil refinery site will be contained, and contaminated underground water to the southwest of the site will be cleaned up through a plan proposed by U.S. Environmental Protection Agency. At the Cam-Or site, EPA proposes to excavate shallow soil (less than 2-feet deep) that is contaminated with lead above concentrations considered hazardous for commercially zoned land and the environment. The excavated soil would be moved to another part of the site and covered to prevent people and wildlife from coming in contact with the pollution.

For both soil and water cleanup, the plan also calls for institutional controls to protect the public and future workers from exposure to contaminants remaining underground or lying under special covers. Institutional controls could include zoning restrictions, use restrictions, soil management plans, recorded restrictive covenants, public notices and posted signs. Harmful chemicals are also present in ground water (underground water supplies) as a result of former site activities. These chemicals flow along with the ground water away from the site toward the southwest. EPA proposes to remove contaminated ground water from beneath this area and treat it to remove the harmful chemicals. As another benefit, the ground water treatment will also reduce the amount of chemicals being released to local surface waterways such as Crumpacker Ditch.

Institutional controls are also proposed that would prohibit ground water usage to protect the public until the cleanup actions are complete. EPA also wants to remove a petroleum mixture that floats on the ground water table to reduce a potential source of ground water contamination. This petroleum-like mixture is called light non-aqueous phase liquid or LNAPL. Once these cleanup actions contained in the proposed plan are implemented, EPA believes they will protect public health and the environment.

Public comment

The purpose of this proposed plan fact sheet is to provide background information about the Cam-Or site, describe the various cleanup options considered and identify EPA's suggested cleanup alternatives.¹ The public is encouraged to comment on this proposal. EPA will be accepting comments from Dec. 3, 2007, to Jan. 11, 2008. EPA also encourages the public to attend and participate in a public meeting at the Westville Public Library, 153 Main St., on Dec. 12, 2007. The meeting will be held at 6:30 p.m. See the adjacent box for ways to participate in this process. EPA could alter its proposed plan or choose a new one based on public comments, so your input is important.

¹ Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, known as the Superfund law) requires EPA to provide an opportunity for public input with a meeting and comment period. It also requires a newspaper ad announcing the proposed cleanup plan with a brief description. This fact sheet summarizes the feasibility study and other site-related reports. The full study and all other official site documents can be found at the Westville Public Library and at the EPA Region 5 office in Chicago.

The public is also encouraged to review the supporting documents for the Cam-Or site. The recently completed remedial investigation and feasibility study documents show what is known about the pollution at the former refinery. They also explain the potential risks to people and the environment and describe various options for handling the problems.

These documents are available at the Westville Public Library and also posted on EPA's Web site:
www.epa.gov/region5/sites/camor

About the Cam-Or site

The 13-acre Cam-Or site is bordered by private homes to the east, by County Road 400 South to the north, an abandoned railroad easement and cultivated fields to the west, and SR2 to the south. The site is currently vacant, and a 6-foot high chain link fence surrounds the property to restrict access.

Recycling of waste oil began at the site in 1934 by Westville Oil. The facility purchased waste oil from service stations, industrial facilities, railroad yards, and pipelines, and the waste oil was reprocessed for use in automotive and industrial lubricating oil blends. Cam-Or purchased the facility in 1976 and continued oil refining operations through 1987. During operations, 11 unlined lagoons were used to store waste oils. Oil and contaminated cooling water were released several times into the Crumpacker Ditch located south of the site. The refinery operations were stopped and the business closed in 1987 when the Indiana Department of Environmental Management and EPA required closure of some existing

lagoons at the facility. EPA placed the property on the National Priorities List in 1998. Sites on the NPL are among the nation's most hazardous waste areas and are eligible for cleanup under the EPA Superfund program.

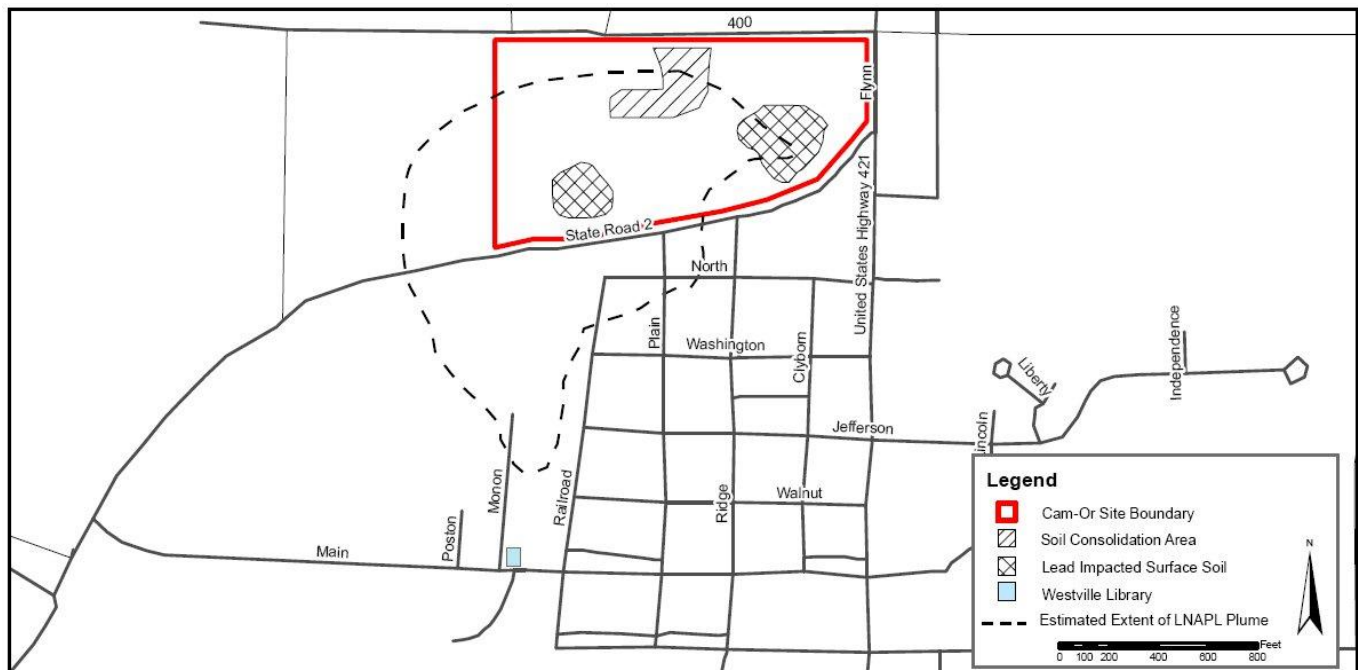
EPA conducted significant work at the site after Cam-Or closed in 1987 to eliminate immediate threats to the public caused by the abandoned facility. EPA emergency cleanup activities included treating about 9.5 million gallons of contaminated water; consolidating contaminated sludge from three lagoons into one; covering the lagoons; and removal of about 112 drums from the site.

In 1989 EPA issued a unilateral administrative order to a number of former customers of Cam-Or Inc. requiring that certain response actions be undertaken at the site. These companies are called "potentially responsible parties" or PRPs because their waste was brought to Cam-Or. The PRPs are now collectively known as the Cam-Or Site Extended Group.

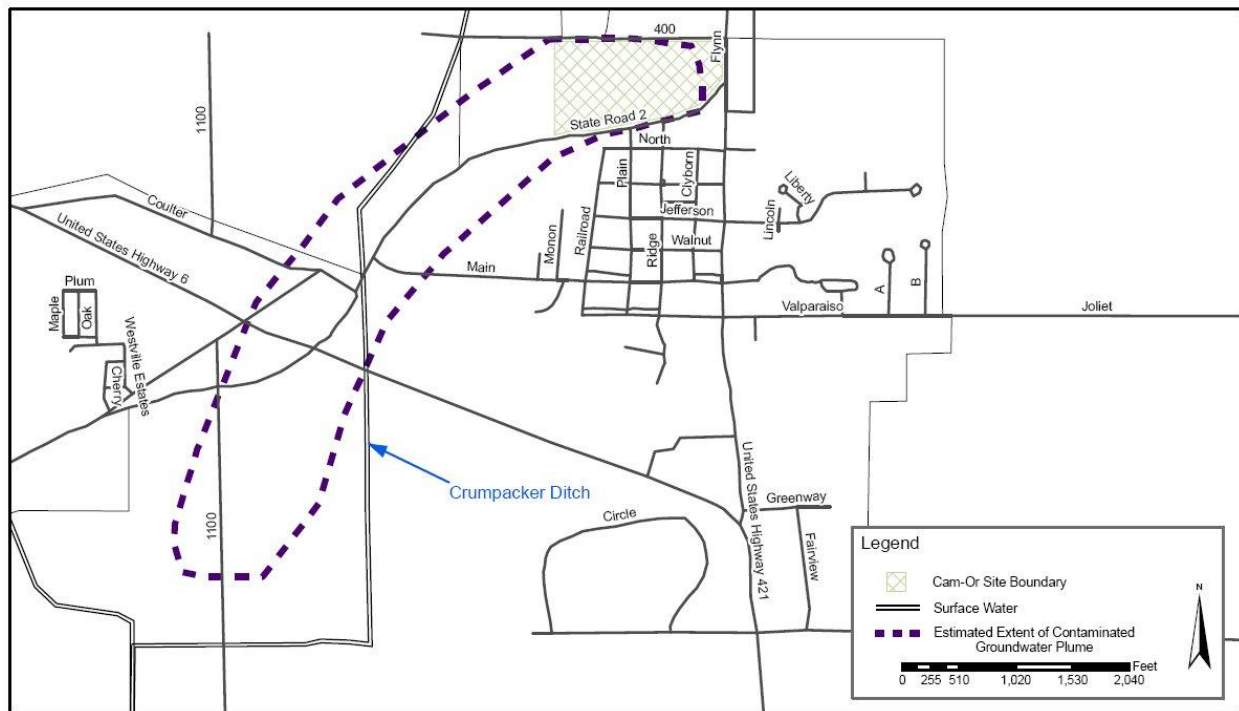
The site is located within an area designated as the West-Tech Redevelopment Area by the Westville Redevelopment Commission. Future use of the site has not yet been determined, but the commission is considering commercial redevelopment of the location and surrounding area.

Summary of site risks

People and wildlife that come in contact with soil at the site may face health risks, mainly from lead. There are



Site map with location of lead-contaminated soil and extent of LNAPL (petroleum product) plume



Estimated extent of contaminated ground water plume

many different health effects associated with lead exposure, including memory or concentration problems, nerve disorders, kidney damage, and learning disabilities and behavior problems in children. Small children or unborn babies are the most sensitive to lead exposure. People who are exposed to ground water lying underneath the site and nearby properties could experience harmful health effects from a range of chemicals related to site activities.

Some of these chemicals include organic compounds (such as 1,4-dioxane, trichloroethene, vinyl chloride, and benzene) and metals (such as arsenic and iron). People are not expected to use the ground water under the site for drinking, but if they did over an extended period of time, they could face an increased risk of developing cancer or experiencing other non-cancer health effects. EPA's cleanup proposals are designed to reduce the risks associated with soil and ground water contamination at the site.

Recommended cleanup options

EPA considered several options for managing and cleaning up contaminated soil, ground water and light non-aqueous phase liquid. The Agency evaluated each option against nine criteria required by law (see box P. 4 for an explanation of the criteria). Cleanup goals were established based on federal, state and local regulations and EPA believes these cleanup actions will protect human health and the environment. Full details are provided in the remedial investigation

and feasibility study reports at the library and on EPA's Web site.

Soil

EPA considered four alternatives for reducing and containing soil contamination. The options were designed to reduce human and wildlife exposure to harmful concentrations of lead in surface soil. These alternatives are summarized below:

Alternative S1 – No Action: In this option, no soil cleanup or control measures would be implemented nor would contaminant levels be monitored. EPA is required by the National Contingency Plan to include a no action option for comparison purposes. **Cost: \$0**

Alternative S2 – Vegetative Soil Cover: A vegetation-topped soil cover consisting of 2 feet of clean material would be placed over areas where lead concentrations in surface soil (0 to 2 feet deep) exceed cleanup goals. This soil cover would prevent exposure and would be installed in two areas covering about 2 acres. The remaining building slabs in the south-central portion of the site to be covered would be demolished and disposed of off-site. Institutional controls would be used to limit exposure to contaminated soil, including maintaining a perimeter fence, implementing deed restrictions requiring the property only be used for commercial or industrial purposes, and limiting future invasive activities where contaminated soil has been capped. Additionally, a soil management plan would establish procedures to protect workers for any future construction or soil disturbance at the site. **Cost: \$1 million**

Alternative S3 – Excavation and On-Site

Consolidation (*this is EPA's suggested option*):

Under this option, surface soil (0 to 2 feet deep) where lead concentrations exceed the cleanup goals would be excavated and placed elsewhere on the site. The consolidated soil areas would then be covered using vegetation-topped soil as described in Alternative S2. The excavation areas would be backfilled with clean material and seeded. An estimated 6,500 cubic yards (around 8,500 tons) of soil would be excavated. Clean soil would be used to backfill and form a vegetation cover to prevent direct exposure to the lead-contaminated soil that may remain after excavation. Like Alternative S2, the remaining building slabs in the south-central area of the site to be covered would also be demolished and disposed of off-site. Institutional controls would be required to restrict land use to commercial or industrial purposes and a soil management plan established. **Cost: \$1 million**

Alternative S4 – Excavation and Off-Site Disposal:

Under this option, surface soil to 2-feet deep with concentrations of lead exceeding cleanup goals would be excavated and transported off-site for disposal. The volume of soil to be excavated would be the same as Alternative S3. As in S3, the excavation areas would be backfilled with clean material to be level with the surface and seeded. The clean soil and vegetation will prevent direct exposure to lead-contaminated soil remaining below the 2-foot excavation depth. The remaining building slabs in the south-central area of the site would be demolished and disposed of off-site. Institutional controls would restrict land use to commercial or industrial purposes and require a soil management plan be established. **Cost: \$3.4 million**

Ground water

EPA considered four alternatives for cleanup of ground water. The options were designed to reduce human exposure to harmful concentrations of pollutants in the underground water supplies. These alternatives are summarized below.

Alternative G1 – No Action: In this option, no ground water cleanup measures would be employed nor would existing control measures already in place be maintained. EPA is required by the National Contingency Plan to include a no action option for comparison purposes. **Cost: \$0**

Alternative G2 – Long-term Monitoring and Optional In-situ Treatment: In this option, long-term, periodic ground water sampling would be performed to monitor reduction in concentrations of “chemicals of concern” (COC) due to natural processes such as decay and dilution. Such monitoring

Explanation of evaluation criteria

EPA uses nine criteria to evaluate and compare cleanup options. See the tables on Page 9 comparing the options against these criteria.

1. Overall protection of human health and the environment addresses whether an option protects both human health and the environment. This standard can be met by reducing or eliminating contaminants or by reducing exposure to it.

2. Compliance with applicable or relevant and appropriate requirements (ARARs) ensures that each clean up option complies with federal, state and local laws.

3. Long-term effectiveness and permanence evaluates how well an option will work over the long-term, including how safely remaining contaminants can be managed.

4. Reduction of toxicity, mobility or volume through treatment addresses how well the option reduces the toxicity, movement and amount of contaminants.

5. Short-term effectiveness compares how quickly an option can help the situation and how much health risk there will be while the option is under construction.

6. Implementability evaluates how difficult the option will be to construct and whether materials and services are available in the area.

7. Cost includes not only buildings, equipment, materials and labor but also the cost of maintaining the option for the life of the cleanup. A cleanup is considered cost effective if its costs are proportionate to its overall effectiveness.

8. State acceptance asks whether the state environmental agency accepts the option. EPA evaluates this criterion after receiving public comments.

9. Community acceptance judges how well the nearby residents accept the option. EPA evaluates this standard after a public hearing and comment period.

would continue until COC levels meet cleanup goals. During the monitoring period, it may be determined that “in-situ” (in the ground) treatment methods, such as chemical oxidation, could be a cost-effective way to reduce the time it takes to meet cleanup goals. Evaluation of the costs associated with this alternative does not currently include these active technologies. Institutional controls would include an area-wide restriction on ground water usage for drinking and deed restrictions barring future installation of wells until cleanup goals are reached. **Cost: \$2 million**

Alternative G3 – Contaminant Mass Removal (Intermediate Duration) with Treatment Building followed by Long-term Monitoring:

Under this alternative, water would be pumped from below ground, and the extracted water would be treated at a building that would be constructed near the intersection of U.S. 6 and SR 2. The water would be treated using ultra-violet light and peroxide to oxidize the contaminants. The treated water would then be discharged to Crumpacker Ditch. A total of eight extraction wells would be employed with a combined rate of 175 gallons per minute. Ground water would be pumped and treated until the level of a chemical named 1,4-dioxane (the main ground water contaminant) in all monitoring wells is reduced to less than a specified cleanup target concentration. After ground water pumping and treatment ends, long-term monitoring would begin to check for decreases in COC concentrations due to natural processes. In-ground cleanup technologies such as chemical oxidation could be implemented in areas with higher concentrations to treat the contaminants and reduce the time to meet cleanup goals. Like Alternative G2, institutional controls consisting of deed restrictions and ground water use prohibitions would be implemented to protect human health and the environment until the cleanup is complete. **Cost: \$7 million**

Alternative G4 – Contaminant Mass Removal (Longer Duration) with Treatment Building followed by Long-term Monitoring (*this is EPA's suggested option*): Under this alternative ground water would be pumped from below ground, treated in a building and discharged to Crumpacker Ditch as described for Alternative G3. However, under Alternative G4 the ground water extraction wells and treatment building would operate for a longer period

What is LNAPL?

Light non-aqueous phase liquid is a generic term commonly used for a substance found in liquid form in polluted soil and ground water. This liquid usually contains petroleum products and a mixture of other contaminants. "Non-aqueous" indicates the liquid is not mixed with water. LNAPL is less dense than water (the "light" part) and will float on water so is generally found on top of the ground water zone.

LNAPL is present underground at the site and extends off-site to the southwest (see map P. 2). The LNAPL at the Cam-Or site is a diesel-like product containing PCBs, benzene, toluene, ethylbenzene, xylene and trichloroethene.

than the previous option until the concentration of 1,4-dioxane in all monitoring wells is found to be at a lower target cleanup level than the target level used in Alternative G3. Long-term monitoring would be employed after ground water pumping ends to make sure natural processes are working to lower pollutant concentrations even further. It is estimated the ground water would meet final cleanup goals for COCs in less time under this option than Alternative G3. Cleanup technologies such as chemical oxidation could be implemented in areas with higher pollutant concentrations to treat the contaminants while they are still in the ground and reduce cleanup time. Institutional controls consisting of deed restrictions and ground water use prohibitions would be implemented to protect human health and the environment until the cleanup is complete. **Cost: \$9.2 million**

LNAPL

EPA considered three options for remediation of LNAPL. The options were designed to address the liquid-phase product at the site in accordance with Superfund practice and state of Indiana guidance.

Alternative L1 – No Action: In this option, no LNAPL cleanup measures would be employed nor would existing control measures already in place be maintained. EPA is required by the National Contingency Plan to include a no action option for comparison purposes. **Cost: \$0**

Alternative L2 – Dual Phase Recovery (*one of EPA's suggested options along with Alternative L3*): In this option, a series of LNAPL recovery wells or trenches would be operated until it has been recovered to the maximum extent possible. Water and LNAPL would be collected separately using a skimmer that floats at the oil-water interface and divides the two liquids. The recovered LNAPL would be pumped into a storage tank and transported off-site for treatment and disposal. The recovered ground water would be piped to a building located on the site and treated probably with a carbon media. Treated water would be discharged to surface water or to Westville's municipal wastewater treatment plant. To the extent feasible and to minimize disturbances to surrounding property owners, extraction wells and pipe trenches installed in the residential area would be located in the road right-of-way where possible. Institutional controls would be implemented consisting of deed restrictions and a soil management plan to prevent direct contact with LNAPL and establish procedures for handling and disposal of contaminated soil as well as worker health and safety. **Cost: \$1 million.**

Alternative L3 – Total Fluids Recovery (*one of EPA's suggested options along with Alternative L2*):

Similar to Alternative L2, this option would involve constructing a series of LNAPL recovery wells or trenches to be operated until LNAPL has been recovered to the most practical extent. The primary difference of this option from Alternative L2 is that both ground water and LNAPL are extracted together and would be divided later using an oil-water separator. Separated LNAPL would then be pumped into a storage tank and transported off-site for treatment and disposal. After separation, the water portion would be piped to a treatment building similar to Alternative L2. The pumping rate used for liquid recovery is higher than the rate used in the dual phase method of Alternative L2 so this option could affect a bigger area. Similar to Alternative L2, institutional controls would be implemented consisting of deed restrictions and a soil management plan to prevent direct contact with LNAPL. **Cost: \$1.3 million**

Evaluation of cleanup alternatives

Each of the soil, ground water and LNAPL cleanup options was evaluated against the nine criteria set by Superfund law (see three evaluation charts P. 9). EPA picked its suggested cleanup alternatives based on the following justifications:

Soil options

EPA proposes the excavation and on-site consolidation (Alternative S3) because it believes this option will achieve the best balance among the nine criteria. This alternative will significantly reduce the exposure to soil contamination by people and wildlife, will comply with all federal and state regulations, and is a cost-effective way to manage the most highly contaminated material. Alternative S1, the no action option, would not protect human health and the environment and does not comply with regulations. Alternative S2 would comply with regulations and provides the same degree of long-term protection from exposure as Alternative S3, but this option would limit redevelopment potential at the site. Alternative S4 would protect human health and the environment and comply with regulations but is significantly more expensive than the other options without significant additional benefit to human health.

Ground water options

For cleanup of contaminated underground water supplies, EPA proposes mass removal with treatment followed by long-term monitoring (Alternative G4). The actual length of time necessary to operate the extraction and treatment system will be determined by carefully considering the progress of the system during the cleanup period.

In addition, EPA is currently reevaluating the toxicity of 1,4-dioxane which could result in a change in the toxicity value for the contaminant. The extraction and treatment system operations could be reassessed if the toxicity value is modified. This alternative will lower concentrations of contaminants in ground water and reduce the chance of human exposure, will comply with all federal and state regulations, and is a cost-effective way to manage contaminated ground water until cleanup goals are met. Alternative G1, the no action option, would not protect human health and the environment and does not comply with regulations. Alternative G2 would not provide the same degree of treatment for contaminants in ground water and would not satisfy the preference for a plan that permanently and significantly reduces the toxicity and volume of the contaminants, a criterion required by the Superfund law. Alternatives G3 and G4, by comparison, satisfy all the criteria. However, because G4 actively reduces the contaminant concentration to a lower cleanup target, it is more effective in the short-term.

LNAPL options

EPA proposes either dual phase recovery (Alternative L2) or total fluids recovery (Alternative L3). Both alternatives will reduce the LNAPL mass in the ground using similar technology processes. Both alternatives will comply with all federal and state regulations and are cost-effective methods. Pre-design studies and testing will be conducted to evaluate the effectiveness of Alternatives L2 and L3. Alternative L1, the no action option, does not comply with state regulations and was therefore not considered.

Next steps

EPA will review comments received during the public comment period before making a decision on the cleanup plan. Based on new information in public comments, EPA may change its proposed options or select another alternative presented in this plan. EPA will respond to comments in a "responsiveness summary." This will be part of a document called a record of decision or ROD that describes the final cleanup plan for the site.

EPA will announce the ROD in a local newspaper, and a copy will be posted on EPA's Web site and placed in the local library. EPA will negotiate with the Cam-Or Site Extended Group to conduct the cleanup under Agency oversight. The cleanup choices will then be designed and constructed, a process that could take several years.

EPA is interested in your comments on the proposed cleanup plan for the Cam-Or Refinery site. You may use the space below to write your comments. Submit them at the Wednesday, Dec. 12, public meeting, or detach, fold, stamp and mail to EPA Community Involvement Coordinator Yolanda Bouchee. Comments must be postmarked by Jan. 11, 2008. If you have any questions, please contact Yolanda directly at 312-353-3209, or toll free at 800-621-8431, weekdays 9 a.m. – 4:30 p.m. Comments may also be e-mailed to Yolanda at bouchee.yolanda@epa.gov or faxed to 312-353-1155 or sent via the Web at epa.gov/region5/publiccomment/.



City _____ State _____ ZIP _____

Cam-Or Refinery Comment Sheet

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Place
First
Class
Postage
Here

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Charts comparing cleanup options with nine Superfund criteria

SOIL OPTIONS	Alternative S1	Alternative S2	Alternative S3*	Alternative S4
EVALUATION CRITERIA				
Overall Protection of Human Health and the Environment	<input type="checkbox"/>	■	■	■
Compliance with ARARs	<input type="checkbox"/>	■	■	■
Long-Term Effectiveness and Permanence	<input type="checkbox"/>	■	■	■
Reduction of Toxicity, Mobility, or Volume Through Treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Effectiveness	<input type="checkbox"/>	■	■	■
Implementability	■	■	■	■
Cost (millions)	\$0	\$1.0	\$1.0	\$3.4
State Acceptance	Will be evaluated after public comment period			
Community Acceptance	Will be evaluated after public comment period			

■ – Meet Criteria □ – Does Not Meet Criteria

*EPA's Suggested Alternative

GROUND WATER OPTIONS	Alternative G1	Alternative G2	Alternative G3	Alternative G4*
EVALUATION CRITERIA				
Overall Protection of Human Health and the Environment	<input type="checkbox"/>	■	■	■
Compliance with ARARs	<input type="checkbox"/>	■	■	■
Long-Term Effectiveness and Permanence	<input type="checkbox"/>	■	■	■
Reduction of Toxicity, Mobility, or Volume Through Treatment	<input type="checkbox"/>	<input type="checkbox"/>	■	■
Short-Term Effectiveness	<input type="checkbox"/>	■	■	■
Implementability	■	■	■	■
Cost (millions)	\$0	\$2.0	\$7.0	\$9.2
State Acceptance	Will be evaluated after public comment period			
Community Acceptance	Will be evaluated after public comment period			

■ – Meet Criteria □ – Does Not Meet Criteria

* EPA's Suggested Alternative

LNAPL OPTIONS	Alternative L1	Alternative L2*	Alternative L3*
EVALUATION CRITERIA			
Protects Human Health and the Environment	<input type="checkbox"/>	■	■
Meets federal and state requirements	<input type="checkbox"/>	■	■
Provides long term protection	<input type="checkbox"/>	■	■
Reduces toxicity, mobility, and volume	<input type="checkbox"/>	■	■
Provides short term protection	<input type="checkbox"/>	■	■
Implementable	■	■	■
Cost (millions)	\$0	\$1.0 M	\$1.3 M
State Acceptance	Will be evaluated after public comment period		
Community acceptance	Will be evaluated after public comment period		

■ – Meet Criteria □ – Does Not Meet Criteria

* EPA's Suggested Alternative(s)

EPA Proposes Cleanup Plan For Refinery Site Westville, Indiana

**Public Comment Period
Dec. 3, 2007 – Jan. 11, 2008**

**Public Meeting
Wednesday, Dec. 12, 2007**

(details inside)

A snapshot of the Cam-Or cleanup proposal ...

- Excavation of soil contaminated with chemical concentrations above site-specific cleanup levels;
- Consolidation of excavated soil near existing soil caps on the site;
- Construction of vegetated soil cover over consolidated excavation areas;
- Collection and treatment of ground water;
- Collection of liquid petroleum that floats on the water table;
- Implementation of institutional controls;
- Long-term monitoring; and
- Estimated total cost is around \$10 million.

CAM-OR REFINERY: EPA Proposes Cleanup Plan

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